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New Species and Records of South African Marine Mollusca from Natal, Zululand, and Moçambique.

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With 4 Text-figures.

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I. SUMMARY.

Three new species of Mollusca from off the coast of Natal and Zululand are described: one Gastropod, one Pelecypod, and one Cephalopod. A note on an already known Cephalopod is included. The Pelecypod is the genotype of a new genus of the family Arcidae. Four genera and several species are recorded for the first time from this region.

II. INTRODUCTION.

OF the species herein described the Pelecypod and the Cephalopods were obtained by the Cape Government trawler *Pieter Faure* many years ago. The Gastropod was originally obtained by a former Natal Fisheries Officer from a fish stomach. Its provenance can therefore be accepted, and it can be included in the South African fauna-list, though of course we do not know where the fish picked up the shell, or how far it had swum before being itself caught.

In addition to the present new records, there are several more records and undescribed species from Natal waters which will be included in Parts 4 and 5 of the author's Revision of the S. African Marine Mollusca.

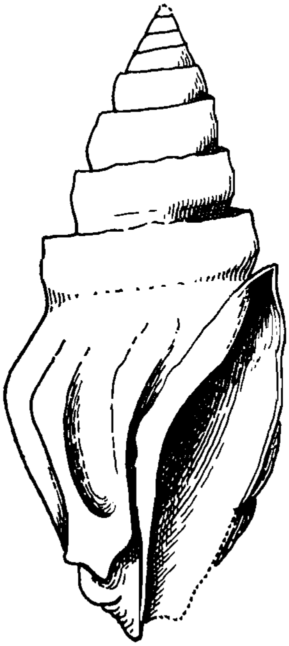
III. GASTROPODA.

A remarkable specimen, containing a Hermit-crab, was obtained from a fish stomach off the Natal coast by the late H. W. Bell-Marley, Natal Fisheries Officer. Later it came into the possession of Mr. Percy Elston of Durban, who, when I expressed a wish to see the specimen, very generously presented it to the South African Museum.

Without the animal it is a matter of guesswork to assign the shell to an appropriate genus. One might suggest a Buccinid genus (*e.g.* compare *Chrysodomus tabulatus* Baird, 1863), but the imbricate scales on the snout are more reminiscent of a Muricid, or a Latiaxid (*e.g.* compare *Latiaxis tabulata* Schepman, 1911). As several shells of various forms have been included in *Latiaxis*, the present shell may also be placed there.

Latiaxis? elstoni n. sp. Text-fig. 1.

Turreted, protoconch broken, 7 whorls remaining. Suture between 2nd and 3rd whorls slightly sunken, between the following whorls becoming increasingly sunken and hidden by a thin coronet. The margin of the coronet appears to have been entire, not lobed or undulate, but is now irregularly chipped. The 4th–7th whorls are shallowly grooved at about the upper third of their height ; all are smooth except the last, on which there are 6 axial ribs, slightly protractively oblique, the 1st slightly curved, the 2nd–4th increasingly curved, the 3rd and 4th being sinuous, the 5th and 6th scarcely curved ; the lower ends of the 2nd–5th ribs form imbricate scales (blunt or worn) around the umbilicus. Aperture 1¼ times the spire, narrow ovate, acute posteriorly where it runs up into the coronet ; anterior canal narrow, but the lower part of outer lip broken. Columella nearly straight, without pleats ; columellar glaze extending nearly to 1st axial rib. Growth-lines very indistinct, but seem to have been straight without any " Pleurotomid sinus ". Length 38, breadth 15·5 mm.



TEXT-FIG. 1.

Latiaxis? elstoni n. sp. The 3rd rib forms the left profile of the body whorl ; outside the outer lip the 6th rib is visible above, and the 5th rib below.

IV. PELECYPODA.

Deltaodon n. genus.

Shell equivalve, inequilateral, area short and very narrow; umbones approximate; no ventral gape; margin internally smooth. Anterior teeth forming a D-shaped group, posterior teeth oblique, a shallow oblique groove separating the two groups.

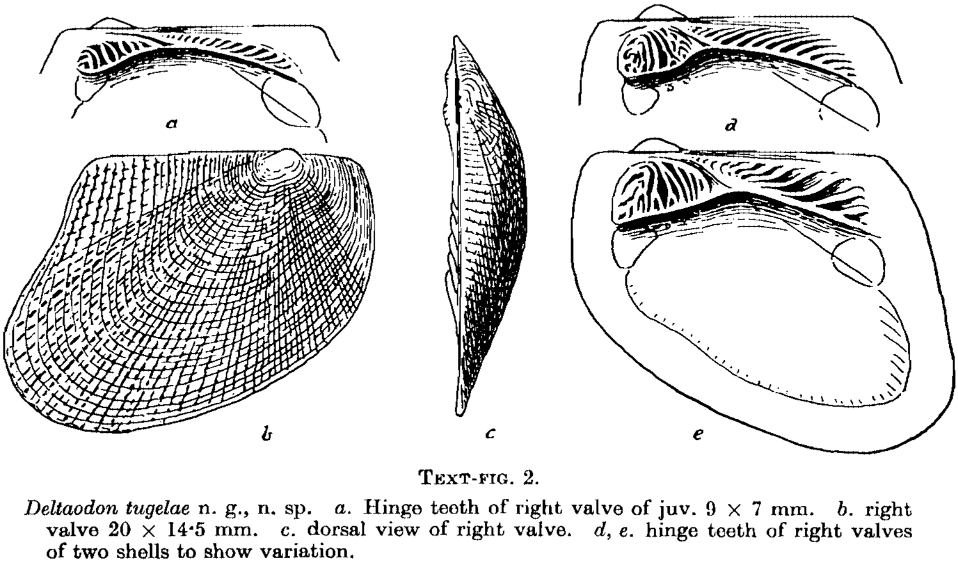
Genotype: *D. tugelae* n. sp.

Seems to differ from the other Arcid genera and subgenera in the greatly reduced dorsal area, and the strong hinge with two groups of teeth. The anterior group as a whole is D-shaped, and the individual teeth radiate and bifurcate like the river mouths in a delta.

The species is named after the Tugela River, the boundary between Natal and Zululand.

Deltaodon tugelae n. sp. Text-fig. 2.

Equivalve, inequilateral, obliquely oval, dorsal margin straight; feebly convex, thick-walled. Front margin perpendicular to dorsal margin, very slightly convex; hind margin oblique to dorsal margin, straight or slightly concave; young shells (as shown by the growth-lines on the older shells) with the ventral margin slightly concave below the umbo. Concentric growth-lines, and in the middle part radial riblets, anterior part without riblets, posterior part with short riblets on each accession, not continuous from umbo to margin. Anteriorly on the middle part the riblets are more or less subequal, but posteriorly main and intermediary riblets can be distinguished.



TEXT-FIG. 2.

Deltaodon tugelae n. g., n. sp. *a*. Hinge teeth of right valve of juv. 9 × 7 mm. *b*. right valve 20 × 14·5 mm. *c*. dorsal view of right valve. *d*, *e*. hinge teeth of right valves of two shells to show variation.

Area short and extremely narrow ; between the posterior teeth and the dorsal margin 2 narrow horizontal grooves, probably representing the posterior extension of the area and ligament. Anterior teeth forming an oval group, the outer 3 more or less angular ; the inner 5–6 irregularly linear, sometimes bifid at lower ends ; posterior teeth oblique or very oblique, varying from 9–13, the inner ones more or less curved, outer ones straight or nearly so ; a shallow oblique groove separates the two groups of teeth.

Anterior adductor scar smaller than posterior scar, with 2–3 tiny scars internally. Margin smooth. No pallial sinus.

Length 9, alt. 7, width (single valve) 2 mm. up to 25 × 19 × 5 mm.

Natal, exact locality not recorded, 21 valves from bottom-sample. One valve attached to a *Xenophora pallidula* (Gastropod), trawled off the Zululand coast, 160–180 fathoms.

Types in South African Museum, Reg. No. A9477. Two cotypes (topotypes) in Natal Museum.

Remarks.—Some of the valves are moderately fresh, but most of them are worn and fretted.

The shape varies somewhat : 20 × 16 mm. (fig. *e*, internal view) and 20 × 14·5 mm. (fig. *b*, external view) ; one valve is rather more convex than the others : 22 × 17 × 5·5 mm. as compared with 20 × 16 × 4 mm., and 20 × 14·5 × 3·5 mm.

The teeth vary, especially the posterior group ; two extremes are figured.

V. CEPHALOPODA.

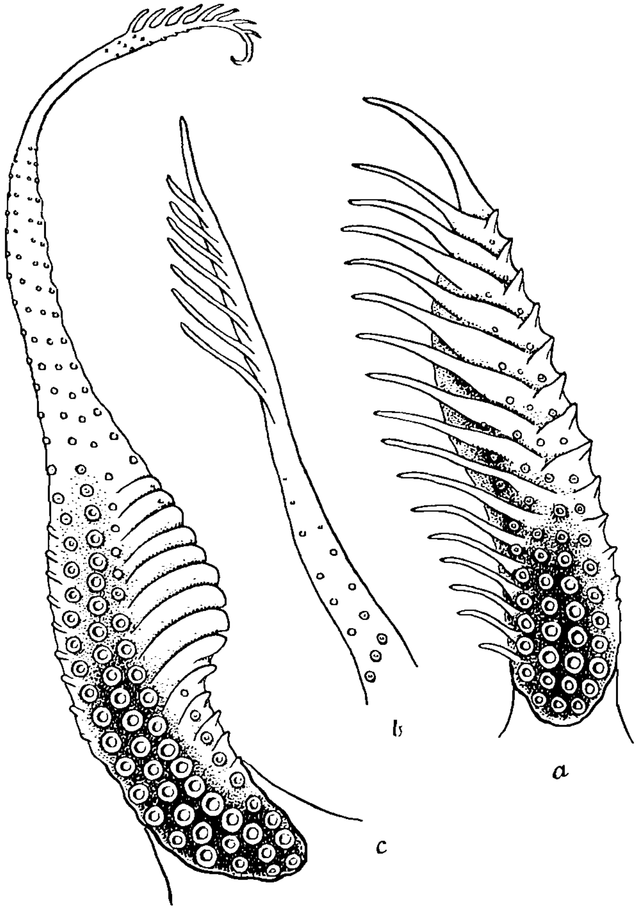
Sepia exsignata n. sp. Text-fig. 3.

Skin smooth, head and mantle sparsely pustulate, the latter with a series of lunate tubercles along the origin of the fins ; a narrow longitudinal dermal fold between the fin base and middle line, not conspicuous (as preserved) but more conspicuous ventrally than dorsally. The fins posteriorly are separate, rounded in ♀ but in ♂ ending in small points (2–3 mm.). Anterior margin of mantle not strongly produced (as in Massy's figure of *incerta* (1925, pl. 13, not her figure of *burnupi*, pl. 12)).

In ♀ dorsal and lateral arms subequal, ventral arms about $1\frac{1}{4}$ times longer ; in ♂ dorsal arms about $1\frac{1}{3}$ longer than lateral arms, and ventral arms about $1\frac{1}{4}$ longer than the dorsal arms. Arms with 4 rows of suckers (except as mentioned below), suckers with smooth rings.

Dorsal arms in ♂ proximally with 6 or 7 rows of normal-sized suckers, but thereafter decreasing in size, becoming minute and eventually obsolete ; the inner protective membrane has about 10–12 small points, the outer membrane has about 16–18 cirriform processes, the middle and distal ones of which originate in the mid-line of the arm and alternate with the bases of the points on the inner membrane.

The right ventral arm in one ♂ has about 10 rows of normal suckers, thereafter the suckers begin to decrease in size, reduced to 3 in a row, and eventually to 2 rows of minute suckers, tip with 5 cirri. The left arm in this ♂ is similar but shows signs of hectocotylization: 4 thickened membranes on ventral margin, and tip with 8 cirri.



TEXT-FIG. 3.

Sepia exsignata n. sp. ♂. *a*. Right dorsal arm. *b*. right ventral arm. *c*. left ventral arm (hectocotylus). Suckers semidiagrammatic to show position and relative sizes.

The other ♂, although of the same size, is more developed: the right ventral arm has 7 cirri; the left ventral arm has 8 or 9 thickened ridges forming an expansion on the ventral margin, and 8 cirri on the tip.

Tentacular club with 4 of the suckers enlarged.

Shell resembling that of *burnupi* Hoyle (as restricted by Smith, 1916, p.

23, pl. 2, fig. 5). A low medio-dorsal ridge defined by shallow grooves, growth-lines V-shaped. Striated area extending about $\frac{3}{4}$ the length, with deep median groove, striae more strongly V-shaped anteriorly than posteriorly, last loculus with minute obliquely-longitudinal striae; limbs of inner cone prominent, nearly parallel but diverging slightly; external to the limbs the chitinous margin is marked with curved striae (cf. Smith, 1916, p. 23, for *burnupi*).

Mantle length, ♀ 36 mm., ♂ 44 mm.

Off Umhlanga River, Natal, 22–26 fathoms. March 7, 1901, s.s. *Pieter Faure* coll. 1 ♀, 2 ♂.

Holotype ♂, allotype ♀ in South African Museum, Reg. No. A6525. Paratype ♂ in Natal Museum.

Remarks.—As regards the so-called " species " *burnupi*, *incerta* and *confusa*, it must be admitted that up to the present we are dealing with *specimens* only, not species with well-defined and constant characters. Of *burnupi* 8 ♂♂ are known, mantle length 125–150 mm.; of *incerta* 2 ♀♀, 90 mm.; of *confusa* 1 ♂, 135 mm. (excluding " tail ").

S. burnupi has elongate modified dorsal arms (see below), the left ventral arm without any modification recognizable as a hectocotylus. *S. incerta* has the dorsal arms not lengthened, and not fringed. It has been conjectured to be the ♀ of *burnupi* (Smith, 1916, p. 23; Massy, 1925, pp. 216, 217). *S. confusa* has the fins produced beyond the end of the body as long " tails "; tentacular club and hectocotylus unknown.

The present specimens agree with none of these three " species ", and in the circumstances no excuse is needed for introducing another specific name.

The specimens were originally preserved in formalin, and consequently the shells are decalcified; but the characters were easily ascertainable by dissection *in situ*.

Sepia burnupi Hoyle

1904. Hoyle. *J. Conch.* xi, p. 27, part: pl. 1, figs. 188, 189 (shell).
1916. Smith. *Proc. Mal. Soc.* **12**: 23, pl. 2, fig. 5 (shell).
1925. Massy. *Ann. Natal Mus.* **5**: 215, pl. 12, figs. 12–19; pl. 14, figs. 39, 41, 42 (animal).
1928. Massy. *Ann. Natal Mus.* **6**: 94.

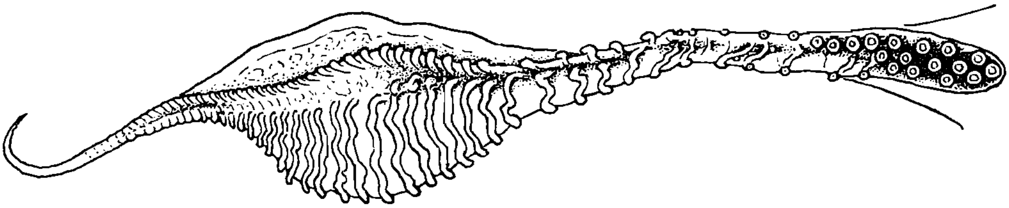
Six specimens were taken by the *Pieter Faure* in the East London area: 33° 4′ S. 27° 54′ E. 27 fathoms. Four of these are definitely ♂♂, with mantle lengths of 112, 130, 130, and 143 mm.

At 112 and 130 mm. length the dorsal arms are twice as long as the lateral arms, and the ventral arms half as long again as the lateral arms. At 143 mm. length the dorsal arms are $2\frac{1}{2}$ times and the ventral arms nearly twice as long as the lateral arms. In all these 4 specimens the dorsal arms are modified.

Massy's 2 ♂♂ were not in good condition, and she was thereby misled into describing and figuring (1925) the modifications of the dorsal arm as " fringe-like " and depending from the arm like " wisps of sea-weed ".

Actually only the ventral protective membrane is expanded, and it is entire, not fibriate, with transverse rib-like, more or less vermiform thickenings. One of the present specimens has been injured in the trawl and the expansions are frayed out into a number of cirrus-like processes.

Proximally there are about 12–15 (Massy: 20) normal-sized suckers, followed by a few tiny suckers; thereafter rib-like thickenings on both protective membranes, but greatly lengthened on the expanded ventral membrane; distally these thickenings diminish in size, rather abruptly on the ventral membrane, finally becoming obsolete before reaching the fine apical tip.



TEXT-FIG. 4.
Sepia burnupi Hoyle. Ventral view of right dorsal arm.♂

In none of these specimens is there any modification of the left ventral arm which can be recognized as a hectocotylus. The suckers decrease regularly and gradually in size throughout the whole length of the arm, and on the distal quarter are gradually reduced to 3 in a row, then to 2, and finally to a single row extending to the tip.

Teratological specimen.—In the largest specimen the tentacular arm on each side emerges from an orifice behind the base of the ventral arm and below the eye; the pocket for the arm opens also in the normal position between the 3rd and 4th arms.

VI. NEW RECORDS.

The following are new records for the South African region (south of 15° S. lat.), *Phenacolepas*, *Zeidora*, *Seguenzia*, *Fragum*, *Palliolum*, and *Leptomya* being new generic records for this region.

Gastropoda

Phenacolepas asperulata (H. and A. Adams). Delagoa Bay (Zool. Dept. University Witwatersrand).

Phenacolepas fulva (Müller). Inhambane (Zool. Dept. University Cape Town).

Zeidora reticulata A. Adams. Off Tugela River, 65–80 fathoms (*Pieter Faure*).

Seguenzia sykesi Schepman. Natal (*Pieter Faure*).

Pelecypoda

Nucula sultana Thiele. Delagoa Bay (coll. K. H. B.).

Crenatula mytiloides Lam. Bazarute Island (S. Afr. Mus).

Pecten fumatus Reeve. Several localities off Natal and Zululand, 27–54 fathoms (*Pieter Faure*).

Chlamys bullatus Dautz. and Bavay. Several localities off Natal and Zululand, 27–54 fathoms (*Pieter Faure*).

Palliolum vitreum (Chemn.) Schröter. Off Cape Vidal, Zululand, 80–100 fathoms (*Pieter Faure*).

Amussium texturatum Dautz. and Bavay. Several localities off Natal and Zululand, 36–90 fathoms (*Pieter Faure*).

Phacoides semperiana (Issel). Delagoa Bay (Univ. Witwatersrand). Inhambane (Univ. Cape Town).

Fragum fragum (Linn). Off O'Neil Peak, Zululand, 90 fathoms (*Pieter Faure*).

Chione (*Timoclea*) *mindanensis* (Smith). Off O'Neil Peak, Zululand, 90 fathoms ; off Cape Natal 54 fathoms (*Pieter Faure*).

Venerupis macrophylla Desh. St. Lucia Bay (Univ. Cape Town).

Leptomya psittacus Hanley. Bazarute Island (S. Afr. Mus.).

Tellina queketti Sow., 1897 = *T. ludwigii* Krauss, 1848.

Barnea durbanensis van Hoepen, 1941 = *B. manilensis* Phil., 1847.

Verticordia ericia Hedley. Off Cape Vidal, Zululand, 80–100 fathoms (*Pieter Faure*).

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